

# AMERICAN GEOTECH, INC.

103038  
cs:\Berkfill.doc

Geotechnical, Hydrogeological, Environmental, Structural and Material Testing  
1801 Penn Ave, Wyomissing Hills, PA 19609 /Tel. 610 670-9055/Fax: 610 678-2719

Mr. Anthony Koller  
Remedial Project Manager  
EPA, Region III  
841 Chestnut Building  
Philadelphia, PA 19107

RECEIVED

JUN 30 1994

June 21, 1994  
PA Remedial Response Section

**SUBJECT: EPA SUPERFUND SITE #3-HW-21  
BERKS LANDFILL  
REVIEW COMMENTS ON GOLDER'S  
DRAFT REMEDIAL INVESTIGATION REPORT  
SUPPLEMENT TO MY MARCH 11, 1994 LETTER**

Dear Mr. Koller:

On behalf of the Concerned Citizens of Western Berks County, I have reviewed Golder's Draft Remedial Investigation Report dated March 1994. I have the following comments:

**1. Existing Landfill Cap Condition - Golder's findings in their Executive Summary indicate below:**

- The existing cap on the eastern landfill was constructed with a relatively good degree of quality control regarding thickness, compaction, and grading.
- The existing cap on the western landfill, while exhibiting lower cap thicknesses and field densities than the eastern landfill, also appears to have been compacted and graded during closure and has heavily vegetated side slopes.
- Overall, the existing cap materials are generally of the quality and character appropriate for landfill caps and are performing many of the functions for which they were designed.

However, our findings do not agree with Golder's. We have summarized Golder's field and laboratory test results in Table 1 and Figure 1 and have the following conclusions:

- The actual cap thicknesses vary from less than 2" to 36". More than 60% of both landfill areas have the thickness less than the specification (2').
- The capping materials consist of silty sand, fine to medium sand, silty gravel, clayey sand, or silty clay. More than half the landfill caps do not contain clayey materials.
- Out of 8 field density tests (73.6% to 100.9%), 5 of the tests were below 90% of the standard proctor density. Golder's acceptance criteria were based on average value and are totally unacceptable.
- The permeability tests were performed based on the recompacted samples. The permeability value is dependent upon the material type, compaction effort, natural moisture content, and other factors. The test quantity and test method are not representative. To verify the permeability of the landfill cap, the field permeability or permeability in laboratory on relatively undisturbed samples using Shelby tubes should be performed.

**2. Geology and Hydrogeology - Information obtained from Borings G-4, G-5, and G-13 indicates that the upper layer of the diabase has hydraulic conductivities similar to fractured sandstone. With this limited information, it is inappropriate to conclude at this time that the diabase encircles the site in a saucer-like configuration, providing a physical and hydraulic barrier. If two flow systems; a shallow water table aquifer and a deeper semi-confined flow system exist under the existing landfills, additional information should be provided:**


- Additional piezometers at different elevations inside the diabase and at different locations should be installed to confirm the actual potentiometric surface of the deeper aquifer, if any. Water samples from the deeper aquifer should also be collected and tested to include in this RI study.
- We believe that additional borings and piezometers may be necessary to be drilled and installed along the Cacoosing Creek tributary at the Northwest of the Site.

**3. Groundwater** - Please review my March 11, 1994 letter.

- The upgradient or background wells are too close to the landfills and may not be adequate to be considered as background wells.
- Golder only evaluated two sets of the test results for the on-site wells (9/3/92 and 7/93). Only 4 sets (9/92, 6/93, 11/93, 1/94) of the test results for the residential wells were available for evaluation.
- Since some on-site monitoring wells were decommissioned and replaced at a significant distance from the original well locations, the replaced wells may not be representative.
- Chemicals detected by NUS/EPA since 1985 in the on-site or in the residential wells, should also be considered in this RI study, since the new monitoring wells may not be intercepting the waste on site due to the size of the site and also due to the inadequacy of the replacement of some decommissioned monitoring wells.

Should you have any questions concerning the above comments, please don't hesitate to call me or to set up a meeting to discuss them.

Very truly yours,

  
Kin Y C Chung, Ph.D., P.E.  
Consultant for CCWBC

Encl.

CC: Ms. Vivian Faust  
Ron Klinikowski (PADER)  
Cross Roads Center  
1005 Cross Roads Blvd  
Reading 19605  
John Ravert, County Environmentalist  
Berks County AG Center  
Leesport, PA 19533

AMERICAN GEOTECH, INC.  
1801 PENN AVE., WYOMISSING HILLS, PA 19009  
PHONE: 670-9055 FAX: 678-2719

TABLE 1 - ANALYSIS OF LANDELL CAP QUALITY

SAMPLE ID	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	GROUP NAME	MODIFICATIONS	GROUP SYMBOL	OPTIMUM MOISTURE	MAXIMUM DRY DENSITY	FIELD DRY DENSITY	PERCENT COMPACTION	PERMEABILITY	CAP THICKNES
PHASE 1B												
SCE-1	33	20	13	SANDY LEAN CLAY	SANDY LEAN CLAY	CL	-	-	97.8	-	-	18-20(NR)
SCE-2	32	21	11	SANDY LEAN CLAY	SANDY LEAN CLAY	CL	-	-	98.3	-	-	24(NR)
SCE-3	31	22	9	CLAYEY SAND W/ GRAVEL	CLAYEY SAND W/ GRAVEL	SC	-	-	114.1	-	-	12(NR)
SCE-4	39	25	14	CLAYEY SAND	CLAYEY SAND	SC	-	-	97.1	-	-	24(NR)
SCE-5	-	-	-	-	-	-	-	-	-	-	-	<3
SCE-6	-	-	-	-	-	-	-	-	101.9	-	-	<3
SCE-7	30	23	7	CLAYEY SAND	SILTY SAND	SM	-	-	99.2	-	-	24
SCE-8	35	24	11	SILTY SAND	CLAYEY SAND	SC	-	-	114.8	-	-	33
SCE-9	33	22	11	CLAYEY SAND	CLAYEY SAND	SC	-	-	101.3	-	-	24
SCE-10	31	21	10	SANDY LEAN CLAY	SANDY LEAN CLAY	CL	-	-	101.7	-	-	30(NR)
SCE-11	40	24	16	CLAYEY SAND	CLAYEY SAND	SC	-	-	103	-	-	3
SCE-12	31	20	11	SANDY LEAN CLAY	SANDY LEAN CLAY	CL	-	-	102.8	-	-	30(NR)
SCE-13	39	22	17	SANDY LEAN CLAY	SANDY LEAN CLAY	CL	-	-	100.7	-	-	27(NR)
SCE-14	44	27	17	SANDY SILT	SANDY SILT	ML	-	-	94.9	-	-	18
SCE-15	-	-	-	-	-	-	-	-	-	-	-	3
SCE-16	31	22	9	CLAYEY SAND W/ GRAVEL	CLAYEY SAND W/ GRAVEL	SC	-	-	105.7	-	-	24
SCE-17	35	24	11	CLAYEY SAND	CLAYEY SAND	SC	-	-	108.7	-	-	36
SCE-18	43	31	12	SILTY GRAVEL W/ SAND	SILTY GRAVEL W/ SAND	SC	-	-	104.5	-	-	20
SCE-19	34	22	12	CLAYEY SAND	CLAYEY SAND	SC	-	-	102.6	-	-	12
SCE-20	45	30	15	SANDY SILT	SANDY SILT	ML	-	-	-	-	-	3
SCE-21	31	23	8	CLAYEY GRAVEL WITH SAND	SILTY GRAVEL W/ SAND	GM	-	-	-	-	-	8
SCE-22	33	22	11	SANDY LEAN CLAY	SANDY LEAN CLAY	CL	17	111.5	99.8	9.0E+01	-	4.2E-08 30(NR)
SCE-23	30	21	9	SANDY LEAN CLAY	SANDY LEAN CLAY	CL	-	-	103.9	-	-	30(NR)
SCE-24	36	25	11	SILTY GRAVEL W/ SAND	SILTY GRAVEL W/ SAND	GM	14.1	109.2	97	8.9E+01	-	0.1E-07 18(NR)
SCW-1	34	26	8	SILTY SAND W/ GRAVEL	SILTY SAND W/ GRAVEL	SM	-	-	87.2	-	-	>30
SCW-2	32	21	11	CLAYEY SAND W/ GRAVEL	CLAYEY SAND W/ GRAVEL	SC	-	-	-	-	-	27(NR)
SCW-3	37	26	11	SILTY SAND	SILTY SAND	SM	17.2	102.2	103.1	1.0E+02	-	1.2E-08 24(NR)
SCW-4	32	26	6	SILTY GRAVEL W/ SAND	SILTY GRAVEL W/ SAND	GM	-	-	-	-	-	15
SCW-5	36	32	6	SILTY SAND W/ GRAVEL	SILTY SAND W/ GRAVEL	SM	-	-	-	-	-	<2
SCW-6	33	25	8	SANDY SILT	SANDY SILT	SM	-	-	96.2	-	-	4

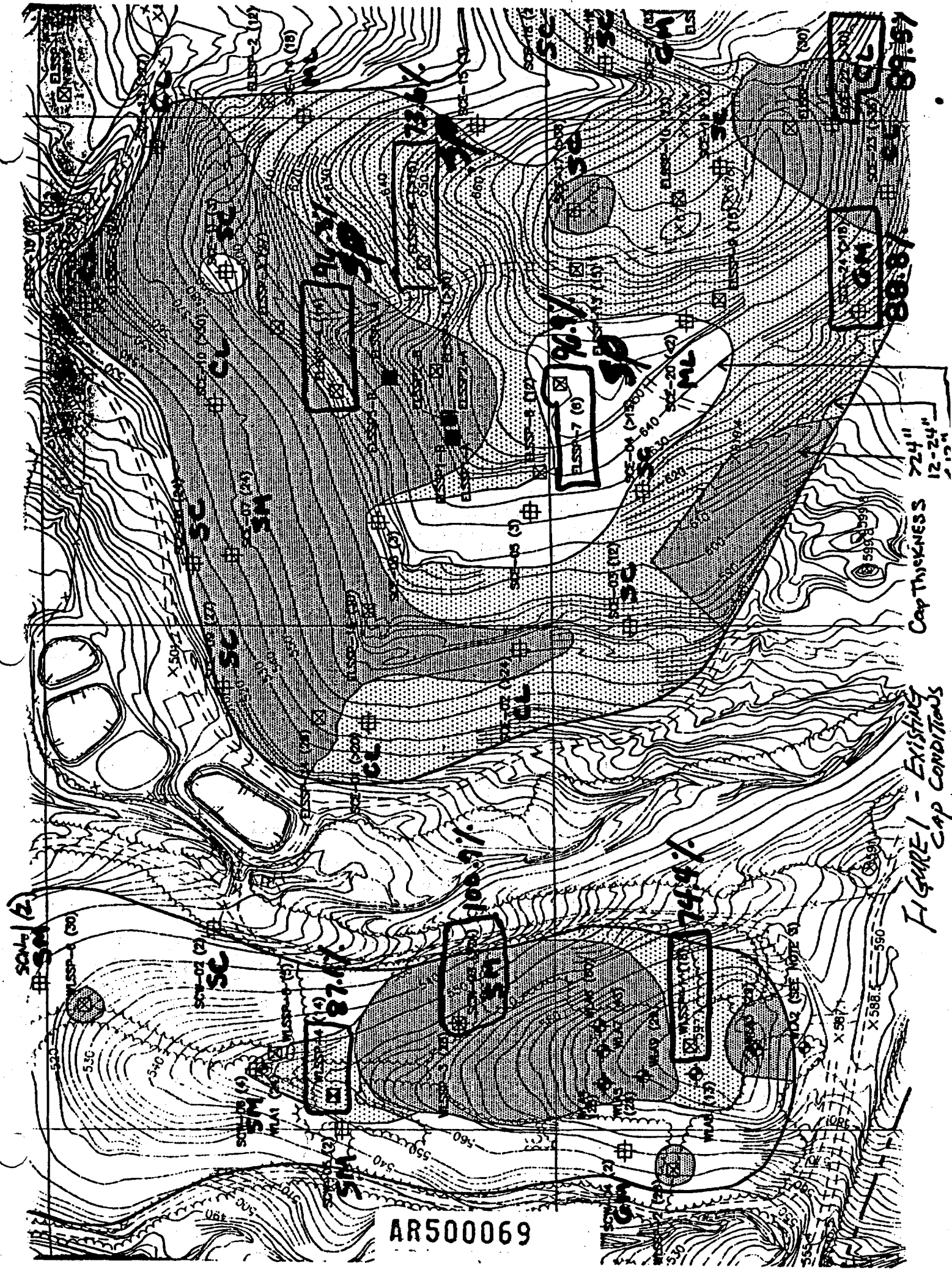
DISTRIBUTION OF SOIL CLASSES

CLASS	EASTERN	WESTERN
CL	7	0
SC	9	1
ML	2	0
SM	1	4
GM	2	1

(NR): NO REFUSE

AR500067





AR500069

Cap Thickness 724" 12-24"

FIGURE 1 - Existing Cap Conditions